

REMARKS

Allowable Subject Matter

In light of the Restriction Requirement, the Office Action states that claims 2, 3, 5-19, 27, and 29-40, out of claims 1-44, are withdrawn from consideration. Thus, claims 1, 4, 20-26, 28, and 41-44 are under consideration. Of the claims under consideration, claims 21-26 are not rejected in the Office Action. Thus, it is applicants understanding that these claims recite allowable subject matter.

Amendments

Claims 15 and 38 are amended to correct obvious typographical errors.

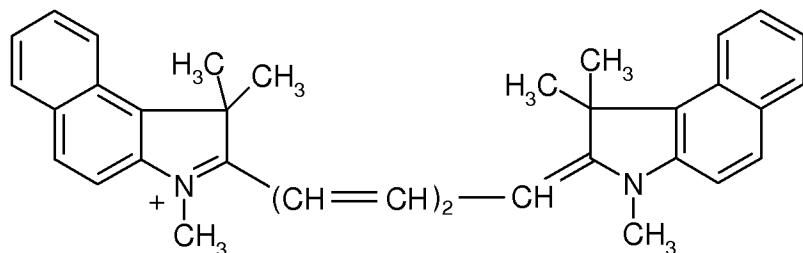
Restriction Requirement

As noted above, based on the Restriction Requirement, claims 2, 3, 5-19, 27, and 29-40, are withdrawn from consideration. Applicants again request that all of the subject matter involving anions of Formula II-2 (i.e., Groups 2, 6, 10, etc.) be examined together. In any event, applicants will file a petition with respect to the Restriction Requirement.

Rejection under 35 USC 103(a) in view of Chapman and either Sartori or Heider

Claims 1, 4, 20, 28, and 41-44 are rejected as being obvious in view of Chapman et al. (US 5,876,821) in combination with either Sartori et al. (US 6,210,830) or Heider et al. (US 6,423,454).

The Examiner refers to dye B-3 disclosed by Chapman et al. at columns 3 and 17. This dye is of the following formula:



PF₆⁻

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It is noted that this is a carbocyanine dye, not a cyanine dye (compare applicants' claim 20).

See also the carbocyanine cation 5e at page 17 of applicants' specification.

The Examiner argues that it would be obvious to modify this dye of Chapman et al. by replacing the hexafluorophosphate anion, PF_6^- , with a fluoroalkylphosphate anion in view of the teachings of either Sartori et al. or Heider et al.

In general, the disclosure of Chapman et al. is directed to optical recording elements and the recording layers applied thereto. In particular, Chapman et al. disclose a dye mixture for use in a recording layer. The dye mixture is said to have, at 780 nm, a real refractive index of not less than 1.8, and an imaginary part which is not greater than 0.15. Additionally, the dye mixture comprises (a) a tetra dye having a metallized azo dianionic dye with a cationic dye counterion, and (b) at least one other dye having a structure in accordance with Chapman et al.'s Formula I. The dye B-3 shown above and cited in the rejection is disclosed by Chapman et al. as being a dye in accordance with Formula I.

The recording elements made using the dye mixture of Chapman et al. are said to have "greater sensitivity" in compared to recording elements using tetra dyes. See column 2, lines 9-13 and column 2, lines 57-60. Table 7 at column 15 presents results that show that Chapman et al.'s dye mixtures have somewhat lower light stability than tetra dyes alone but greater light stability than a dye of Formula I alone.

It is acknowledged in the rejection that the dye of Chapman et al. has a hexafluorophosphate anion, PF_6^- , rather than an FAP (fluoroalkylphosphate) anion. With respect to FAP (fluoroalkylphosphate) anions the rejection refers to the disclosures of Sartori et al. (US '830) and Heider et al. (US '454).

Sartori et al. disclose lithium fluoroalkylphosphates of the formula $\text{Li}^+[\text{PF}_a(\text{CH}_b\text{F}_c(\text{CF}_3)_d)_e^-]$ wherein: a is 1, 2, 3, 4 or 5; b is 0 or 1; c is 0, 1, 2 or 3; d is 0, 1, 2 or 3; and e is 1, 2, 3 or 4. In addition, the sum of a+e is equal to 6, the sum of b+c+d is equal to 3, and b and c are not simultaneously 0. These lithium salts are said to be useful in electrolytes and lithium batteries made from such electrolytes. See column 1, lines 4-20.

Sartori et al. also disclose that lithium hexafluorophosphate is known to be used as a conducting salt in lithium secondary batteries, but that this lithium salt has the disadvantage of relatively little resistance to hydrolysis. Sartori et al. also disclose that their new lithium fluoroalkylphosphate salts can be used in place of lithium hexafluorophosphate, and that

these new lithium fluoroalkylphosphate salts are resistant to hydrolysis in aprotic polar solvents. See column 1, lines 39-41, column 2, lines 8-10, and column 4, lines 37-42.

Heider et al. also disclose lithium fluoroalkylphosphate salts, specifically salts of the formula $\text{Li}^+[\text{PF}_x(\text{C}_y\text{F}_{2y+1-z}\text{H}_z)_{6-x}]^-$ wherein $1 \leq x \leq 5$, $3 \leq y \leq 8$, and $0 \leq z \leq 2y+1$, with the exclusion of compounds of the formula $\text{Li}^+[\text{PF}_a(\text{CH}_b\text{F}_c(\text{CF}_3)_d)_e]^-$ (see Sartori et al.). As with the disclosure of Sartori et al., Heider et al. also disclose that lithium hexafluorophosphate has been used in lithium batteries as an electrolyte salt, and that this salt is extremely hydrolysis-sensitive. Heider et al. further disclose that their lithium fluoroalkylphosphate salts can be used as electrolyte salts in batteries, and that their salts are resistant to hydrolysis. See column 1, lines 17-24, column 1, lines 53-58, column 2, lines 21-31, and column 9, lines 16-57.

In the rejection, it is asserted that it would be obvious to replace the hexafluorophosphate anion, PF_6^- , in the dyes of Chapman et al. with a FAP anion so as to obtain greater stability based on the disclosures of Sartori et al. and Heider et al. Applicants disagree.

The resistance to hydrolysis disclosed by Sartori et al. and Heider et al. relates to **lithium** salts, not dyes and particularly not dyes such as disclosed by Chapman et al. Additionally, FAP anions behave differently than the hexafluorophosphate anion, PF_6^- . In contrast to the PF_6^- anion, FAP anions are weakly coordinating anions and thus will have low interaction with the cationic portion of the dye. The impact of these weakly coordinating anions on properties of the dyes such as color, chemical and thermal stability would not be known nor could they be predicted based on the properties of the PF_6^- anion with respect to dyes.

Additionally, the rejection is premised on an assertion that a comparison of the properties of LiPF_6 salt and LiFAP salts would lead to an expectation of a similar comparison of properties for PF_6^- dyes and FAP^- dyes (applicants disagree with this asserted expectation as discussed above). Thus, the rejection asserts that since LiFAP salts have greater resistance to hydrolysis than LiPF_6 , then it would be expected that FAP^- dyes would have greater resistance to hydrolysis than PF_6^- dyes.

To demonstrate that this expectation is incorrect, one can look at another property, specifically solubility in water. LiPF_6 has low solubility in water. In comparison, LiFAP

salts have very good solubility in water. Like LiPF₆, PF₆⁻ dyes have low solubility in water. Based on the analysis in the rejection, one would expect that FAP⁻ dyes would have good solubility in water. Yet, FAP⁻ dyes have poor solubility in water. See, e.g., Tables 5 and 6 in applicants' specification at pages 90 and 92.

In view of the above remarks, it is respectfully submitted that the rejection fails to provide sufficient rationale to modify the PF₆⁻ dyes of Chapman et al. by replacing the hexafluorophosphate anion with an FAP (fluoroalkylphosphate) anion. Thus, it is respectfully submitted that the disclosure of Chapman et al. (US 5,876,821), taken alone or in combination with the disclosures of Sartori et al. (US 6,210,830) and/or Heider et al. (US 6,423,454), fails to render obvious applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,
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Date: December 17, 2009

MERCK-3134